


Hitchcock's Machine Tool Blue Book

MARCH, 1932

TWENTY-SEVENTH YEAR

LOWER YOUR BLADE COST



**MARVEL HACK
SAW BLADES**



FOR LONG WEAR



MARVEL HIGH SPEED EDGE HACK SAW BLADES are GUARANTEED not to break in two in any machine—not even by accident. Marvel blades with the genuine high speed steel cutting edge electrically welded to a tough special alloy back outlast ordinary blades from six to ten times, and with faster, cleaner cuts, and fewer blade changes. Constant re-orders from users everywhere is the best proof of the wonderful results obtained with Marvel Blades. *Try them. You'll like them.*



ARMSTRONG-BLUM MFG. CO.

341 N. Francisco Ave., Chicago, Ill.

PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

Threading 1200 pieces per Hour

These brass wing
screws shown are
being threaded on
our



Standard High Speed Tapping Machine



*Let us show you what can
be done on your work*

Leland-Gifford Company, - Worcester, Mass., U.S.A.

BRANCHES

BOSTON CHICAGO CLEVELAND
DETROIT NEW YORK
PITTSBURGH ROCHESTER

AGENTS

Hendrie & Bolthoff	Denver
F. E. Satterlee Company	Minneapolis
Smith Booth Usher Co.,	Los Angeles
Herberts-Moore Machinery Co.,	San Francisco
F. F. Barber Machinery Co.	Toronto

LELAND - GIFFORD

Hitchcock's Machine Tool Blue Book

**Selected
Circulation**

**25,500
Monthly**

MARCH, 1932

TWENTY-SEVENTH YEAR

SAVING In Selling Costs

Manufacturers everywhere are striving to reduce costs.

The two possible sources of saving are in the cost of production and the cost of marketing.

Any attempts to reduce selling costs, unless made with the greatest care, often result in a disheartening reduction in sales.

However, there is one item of marketing costs which can be reduced by the manufacturer of metal-working equipment with an actual increase in selling opportunities—and that is in advertising.

"Hitchcock's Blue Book" is the one highly specialized advertising tool that is designed for this very purpose. Its value to the advertiser is not to be measured by what it costs, but by what it does.

It provides by far the broadest coverage of the best markets and the most practical and effective advertising service per dollar of cost that the world affords.

Send in your copy and try it out

Published By

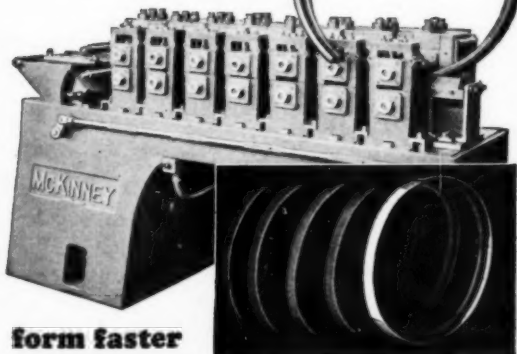
Hitchcock Publishing Co.

508 S. Dearborn St.,

Chicago, Ill.

Consult the Classified Finding Index for your requirements

Curved sections too—



**form faster
and cheaper
with**



Products never considered possible to roll-form are today being produced by this process with surprising savings in time and cost.

McKinney Roll-Forming Machines have been designed not only for the continuous forming of highly complicated straight sections of widely varying materials, but of curved sections as well. The photo above shows a McKinney Machine designed to form metal tire covers. The section is formed in a continuous spiral which is then cut as desired. Inset shows metal rims formerly formed by stamping, now being roll-formed, cut and spot-welded with a very considerable saving of material.

Similar economies may be possible with your products or purchased parts. Competent McKinney engineers will advise you without obligation. Write today.

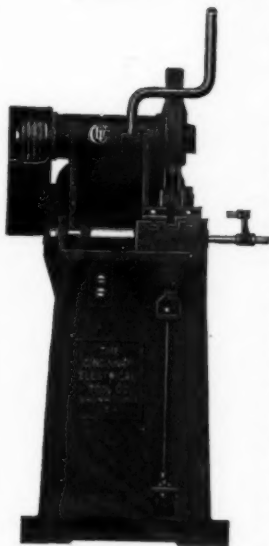
The McKinney Tool & Mfg. Co.

1684 Arabella Road,

Cleveland, Ohio

It's Making Good!

The Cincinnati



High Speed Cut-Off Machine

THE CINCINNATI High Speed Cut-Off Machine provides the ideal means of cutting steel alloys, brass, copper, aluminum, as well as fibrous materials of all kinds into various shapes, sizes and angles, up to $2\frac{1}{4}$ " inclusive.

THE CINCINNATI Cut-Off Machine uses 12 or 14-inch diameter abrasive wheels operating at peripheral speeds from 16,000 to 18,000 S. F. M. The cutting-off wheel is completely guarded except for the portion necessary for the cutting operation.

Suitable for straight or angle cuts up to 45° . Graduations on table make angle cutting accurate and fast.

SEND FOR A BULLETIN—
IT DESCRIBES ALL THE FEATURES OF THIS TOOL

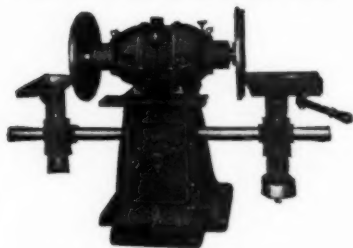
The Cincinnati Electrical Tool Co.

Division of the R. K. LeBlond Machine Tool Co.

2701 Madison Road,

Cincinnati, Ohio

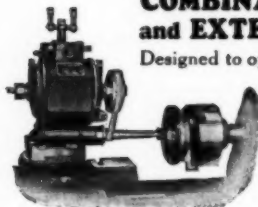
THE STANDARD GRINDERS



DISC GRINDERS

General Electric 40° Motor and Push Button Control.
SKF Ball Bearings. High Grade Nickel Steel Shaft.
1 H. P. to 10 H. P.

COMBINATION INTERNAL and EXTERNAL GRINDERS



Designed to operate in a wide field of precision grinding. SKF ball bearings. $\frac{1}{4}$ to 1 H. P.

**Tool Post or Center
Grinders.**

**Angle Plate or Parallel
Grinders.**

Write for complete catalog

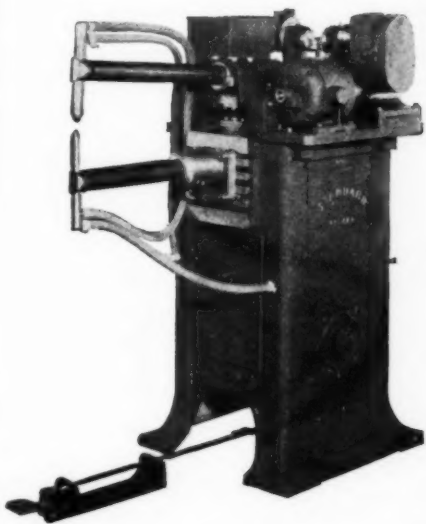
The Standard Electrical Tool Co.

1952 West 8th St.,

Cincinnati, Ohio

Standardize with Standard Tools

“Standard” Automatic



A fully automatic, top drive spot welder. Built in 20, 25 and 33 KVA capacities. Five speed changes from 45 to 140 strokes per minute. Positively the smoothest operating spot welder on the market. *Write for prices.*

The Lenney Machine & Manufacturing Co.
Warren, Ohio

FOOTBURT



A Single Spindle Footburt Sipp Sensitive Drill

**Made in three
sizes of single
and multiple
spindle models**

More holes with this machine

Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

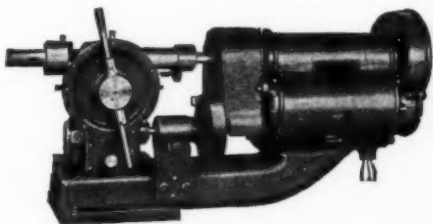
The Foote-Burt Company, Cleveland, O.

FOOTBURT

DO YOU KNOW

about the most modern practice in selecting equipment for small hole drilling and tapping, when production requirements are high ?

HERE'S THE ANSWER!



Avey MOTOR DRIVEN DRILLING UNITS are a standard product—built in various types and sizes—and they can be mounted to suit your work.

Our engineering department is at your service. Let us figure on your drilling problems, and show you the way to lower costs.

THE AVEY DRILLING MACHINE CO.
CINCINNATI, OHIO

WISE

6", 9" and 12" Jaws

With and Without Jig Attachments

Often used on
MILLER, SHAPER
 or **PLANER**

Attachments mean much
 drilling—small Jig cost.

ANY VISE WILL PAY

More time lost catching work than drilling



Fig. 2
 Without Jig
 Attachments

DRILL **SPEEDER**

or High Speed Drilling Attachment

Drives Small Drills up to proper Speed

INCREASE THE SPEED 3 TIMES

For making small holes in large
 work under Drilling Machines,—
 20-in. to largest Radial.

FOUR SIZES—THREE STYLES

Suits Straight or Taper Shank
 Drills up to 3/4" with Speeds to
 3,000 R.P.M.

Various
 Shanks



Try it and you will drill twice as many
 holes in the same time.

Do not over-speed Radial. Keep a Speeder
 within reach of it or Upright Drill Press.

KNURL HOLDER

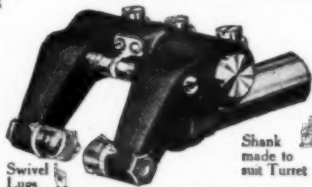
Operates like Screw Die

Adjustable to any size
 within its capacity.

TWO SIZES—TWO STYLES

Straight Cut Knurls in
 Swivel Lugs Produce
 all Standard Knurling.

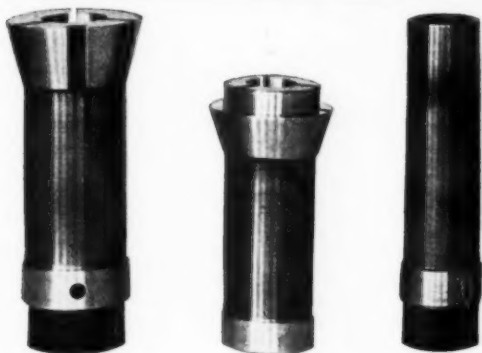
Circulars of All



Swivel
 Lugs

Shank
 made to
 suit Turret

THE GRAHAM MFG. CO., 78 Willard Ave. PROVIDENCE, R. I.



Lathe Collets
Screw Machine Collets
Feed Fingers

For every type of machine

SPECIAL SHAPES MADE TO ORDER

PORST BROS.

Manufacturers

5255 Ravenswood Ave.,

Chicago, Ill.

UNTIL NOW NO SUCH ANNOUNCING The New MIRACLE

10 day free trial

DO YOU want to do fast grinding? Do you want the greatest air tool bargain? It's here for you in this new air tool miracle—the Kipp Air Grinder, Model Double D.

The first Kipp 40,000 R. P. M. small wheel grinders at \$25.00 are well known to tens of thousands of mechanics as the tool sensation of 1930. Until now, top speed has not been available for large wheels. The Double D Model is at once the 1932 tool marvel and the answer to a deluge of urgent requests for a companion tool to the 1930 size, for the heavier and larger grinding needs in every shop.



- ♦ Larger-Heavier
- ♦ Throws Mighty Sparks
- ♦ One Hand Grip
- ♦ Takes Wheels up to 1½"
- ♦ ILLUSTRATION 2/3 SIZE
- ♦ WEIGHT 2½ LBS.

SPEED FOR LARGE WHEELS



30,000 R. P. M. is the ideal speed for large wheels. 30,000 R.P.M. is the controlled speed of the Kipp Double D Grinder. 30,000 R. P. M. provides a glamorous array of sparks when the special Kipp Double D wheels are applied to hardened steel. They will grind almost any material.

At \$45.00 complete with 8 feet of hose, quick acting connector, 3 wheels, oil and pressure oiler, you get a great bargain.

Ten day free trial is offered any concern with a satisfactory credit rating. Please use order blank attached.

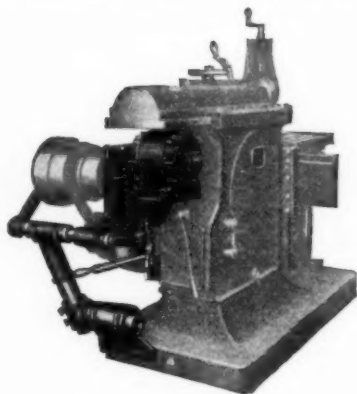
ORDER BLANK

MADISON-KIPP CORPORATION
217 Waubesa Street, Madison, Wisconsin.

Send one Model Double D Kipp Air Grinder at \$45.00, net 30 days, postpaid. If it is not satisfactory we will return invoice and grinder on or before the 10th day after date of invoice. (Note: If you prefer to use your regular order form, please attach this coupon to it and copy the above return arrangement on your order for a complete record.)

Ship to State
Address Signed
City Title

The Cullman Shaper Drive



Motorize your cone pulley Shapers, Lathes and Milling Machines with Cullman Drives. Made in $\frac{1}{2}$ to $7\frac{1}{2}$ H. P. sizes Easy to install, bolts to your machine.

Send for literature

Cullman Wheel Company
1359 Altgeld St., Chicago, Ill.

Sprockets — Speed Reducers

THE KIPP STEEL WRITER

\$5⁰⁰

If you have a
Kipp Air Grinder

\$30.00
complete with
Grinder



The Kipp Steel Writer is a new special point for use with the Kipp Air Grinder, especially valuable for marking tools. It will mark steel, glass, and of course, soft metals, smoothly and legibly, almost as fast as you can write with a lead

pencil. If you have a Kipp Air Grinder, all you need is the Kipp Steel Writer. Kipp AG Grinder and Kipp Steel writer will be sent on 10-day free trial to any firm with satisfactory credit rating.

Order direct from:

Madison-Kipp Corporation

217 Waubesa St.,

Madison, Wisconsin

The VIM Bench Machine



Type "C"
for Screw Driving
and Nut Setting

Operated by foot pedal, leaving both hands free for adjusting work in hand. It is especially designed for female help. Throat or clearance of work is 6". Screws and nuts can be driven at high speed—2000 R. P. M. bit speed—if desired. We manufacture *five different types*, for all purposes of screw driving and nut setting.

Send for circulars describing these tools

VIM ELECTRIC TOOL CO.

149 Broadway,

New York, N. Y.

A Practical Method of Saving Space, Time and Labor



*STACKBINS are made in numerous sizes—individual and sectional.
They can be used for stockroom control and in connection
with regular production and assembly.*

This is the new and modern way to eliminate waste . . . put speed and economy into production. Stackbin equipment enables you to make maximum use of all available space . . . you can stack them as high as you want, . . . fill them to capacity . . . you can always get at the contents without disturbing the bins above or below.

*Stackbins are used as standard equipment
in a great many of the leading plants.*

*Special sizes can be furnished to meet your requirements.
Send for descriptive circulars today—use the coupon.*

STACKBIN CORPORATION
Pearl & Rice Streets, Providence, R. I.

Kindly send illustrated circular and quote prices on Stackbin equipment.

Name

Address

City State

Wittek Universal Die Sawing and Filing Machine

has many new and improved features



This machine has three speeds with adjustable stroke from 1 $\frac{3}{4}$ " to 5 $\frac{1}{2}$ " Universal saw and file holders hold any size saw or file. It has roller saw guides above and under the table to guide the saw for accurate sawing. The table tilts 15 degree angle in any direction. Has detachable screw feed, and many other features.

**Made in Bench or Floor Models, with Motor
or Belt Drive. Price \$285.00 and up.**

Ask your Machinery Dealer or write us for Bulletin FH.

WITTEK MANUFACTURING CO.

Dept. H. 4307 West 24th Place, Chicago, Ill.



Compare—



The uniform high quality and the moderate prices of ELCO SCREWS, and you will discover what makes them the choice of discriminating buyers everywhere.



Modern production methods, ample warehouses and ideal shipping facilities enable us to offer our customers an unusual combination of Quality and Service. Standard sizes are shipped from stock in any desired quantity.



**-ELCO-
SCREWS**
REDUCE ASSEMBLY COSTS



MACHINE SCREWS
MACHINE SCREW NUTS
WOOD SCREWS
LAG SCREWS
CAP SCREWS
PIPE PLUGS



Write for Samples and Prices



**ELCO TOOL & SCREW
CORPORATION**

1808 Broadway, Rockford, Ill.



"It Pays to Use Good Screws"



Do Your Screw Driving

The Modern Way—

It Pays!

The Reynolds

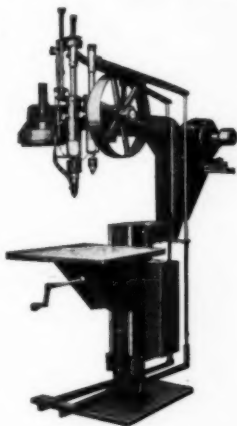
Automatic

MAGAZINE

FED

Screw Driving

Machine



Can Save You from 65 to 85% Over Other Methods

This Modern Machine built for high speed production will drive from 8,000 to 16,000 screws per day. The Magazine Feed enables one man to do the work five men using hand methods can accomplish. Every screw is firmly imbedded and driven so accurately that many users have been able to reduce the number and sizes of screws used.

Drop us a line, giving dimensions over all of your work, the length and gauge of screws used, and we'll submit facts and figures Showing how the REYNOLDS can reduce your costs.

The Reynolds Machine Company

Dept. H. H.

Massillon, Ohio

"THE MODERN WAY TO DRIVE SCREWS"

Men and Women of America:

RECONSTRUCTION

Is in YOUR HANDS!

18

★

You have studied "depression" charts.

You have heard "depression" speeches.

You have read "depression" articles.

You have dreamed "depression" nightmares.

If you are ready now to forget "depression" and give a thought to faith, common sense and reconstruction, come with us through this page.

That America has more resources than the next six nations—and can stand on its own economic feet.

That, if these resources are put to work, instead of being allowed to lie idle, America will rapidly approach a normal condition and benefit all the other nations of the world by showing a way out.

★★ *Let's put this wealth to work—NOW!*

★ *First, some figures—*

By the end of 1930, the national wealth of America had reached the astounding sum of one

We're going to put this wealth to work—we're going to do the sort of thing we did in 1921. Back there, three years after the war, when the country was in the depths of economic despair,

hundred and ninety *billions*—one hundred and thirty-four *billions* more than in 1914, an increase

the War Finance Corporation helped lead us into the light of an unprecedent nation of prosperity.

America had reached the astounding sum of one

country was in the depths of economic despair,

hundred and ninety *billions*—one hundred and thirty-four billions more than in 1914, an increase of 71%.

In our savings banks and trust companies, we have stored up more than twenty-nine billions.

In safe-deposit boxes, in private hidingplaces of all kinds, we have a billion or two more.

We have, ready for use, more than nine and a quarter million bales of cotton, valued at about three hundred millions; and four hundred and twenty-nine million bushels of wheat valued at more than two hundred and fifty-seven millions.

We possess uncounted millions of feet of unused lumber, tons of unused coal and wool and steel.

What do these stupendous figures mean?

Let's get behind it and push!

THE NATIONAL PUBLISHERS ASSOCIATION

"As the most nearly self-contained nation, we have within our own boundaries the elemental factors for recovery."

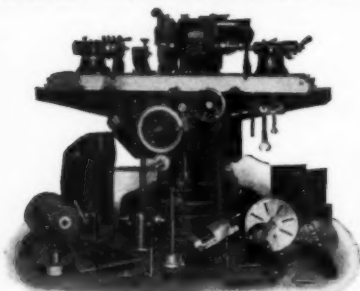
the War Finance Corporation helped lead us into the light of an unprecedented period of prosperity.

"We steadied the situation," said Eugene Meyer in the reconstruction year of 1922, "by taking over the slower loans that were good, removing the necessity for forced liquidation and putting the banks in position to carry their customers for a longer period and to make new loans where adequate security could be obtained. *But our loans have done more than this—they have provided that element which is so necessary in all businesses—the element of confidence.*"

The Reconstruction Finance Corporation, of which Mr. Meyer is Chairman and General Charles G. Dawes is President, has been empowered to use a vast fund of two billions of dollars to relieve credit stringency, to strengthen the sinews of business and to restore faith.

(From the Recommendations of the Committee on Unemployment Plans and Suggestions of the President's Organization on Unemployment Relief)

SIX Grinders In ONE



12"x36" Thompson Universal Grinder

Does every grinding operation required in the machine shop. Lowest cost work for plain, surface, die, cutter, edge and internal grinding. All standard machines equipped with auxiliary independent coarse cross feed for surface grinding.

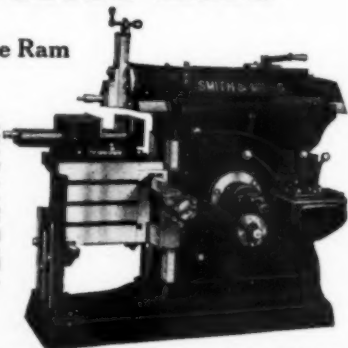
Let us send you the Illustrated Booklet today!

The Thompson Grinder Company
1534 West Main St., 1-1 Springfield, Ohio

SHAPERS

"V" Type Ram

12", 14", 16",
20", 25" Gear
Box single pulley or motor drive, also 16", 20", 25" B. G. cone drive with belt shifter. 32" B. G. all geared single pulley or motor drive, all sizes crank type.

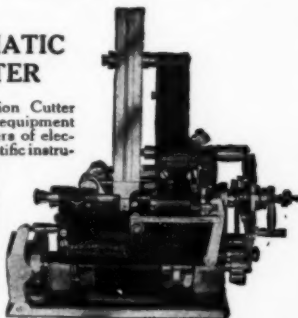


The Smith & Mills Co., Cincinnati, O., U.S.A.

Just Load the Magazine

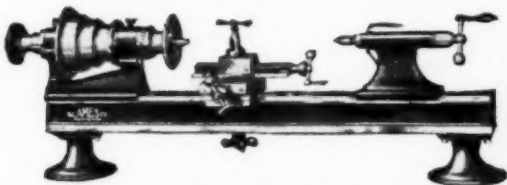
OF THE WADE AUTOMATIC PINION CUTTER

The Wade Automatic Pinion Cutter with Magazine Feed is ideal equipment in the shops of manufacturers of electrical apparatus, meters, scientific instruments, phonographs and similar products. It is simple and dependable. Full automatic action enables one operator to handle several of these machines with ease. The only labor consists of keeping the magazine loaded. Cuts pinions up to $\frac{1}{2}$ " in diameter. Fully detailed in our Circular.



The Wade Tool Co., - Waltham, Mass.

AMES Bench Lathes



For Turning—Drilling—Grinding—Milling—
Threading—Filing—Polishing—in the tool
room or in production.

Send for complete information

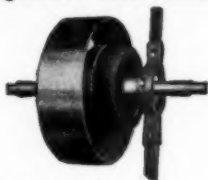
B. C. Ames Co., Waltham, Mass.

Detroit Branch: 902 Stephenson Bldg.

EDGEMONT

Type B Expanding Clutch

Adaptable and Efficient



The Edgemont "Type B" Clutch is adaptable to a wide range of drives. For machine application or general factory use it has been proven to be efficient and inexpensive.

Our catalog "H" shows a complete line. Send for it.

The Edgemont Machine Co.
2900 Home Ave., Dayton, Ohio

"PRO-CUN-IER"

TAPPING ATTACHMENTS

Style
 "E"
 High
 Speed
 Tapper



For only a few dollars, a "PROCUNIER" reversible tapping head converts your drill press into a sensitive tapping machine.

Our brand new cork clutch reversible friction tapper (illustrated), can be driven 3000 R. P. M. on many jobs.

1/4" Capacity \$35.00: 1/2" Capacity \$45.00

"Pro" tappers frequently tap 1/4 to 1/2 million holes before even the clutch is replaced.

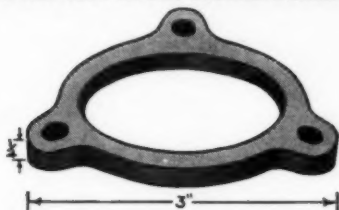
Here's all the "Pro" steel dog clutch tappers cost complete with our new style tap holder:

No. 1—1/4" Capacity; Safety	\$28.00; Positive	\$22.00
No. 2—1/2" Capacity; Safety	\$34.00; Positive	\$28.00
No. 3—3/8" Capacity; Safety	\$40.00; Positive	\$34.00
No. 4—1" Capacity; Safety	\$52.00; Positive	\$46.00

Send for details and free trial offer

Procunier Safety Chuck Co.
14 S. Clinton St., Chicago, Ill.

STAMPED BLANKS *In Small Lots* Without The Cost Of The Standard Blanking Dies



Under our special compound die process we were able to blank and pierce the first 100 parts as shown for \$22.50 and \$2.10 for the blanking and piercing of each additional 100 thereafter, assuring exact duplication, with all holes plus or minus .001" of being concentric. Many parts offer the same advantage to you. Write for further facts on the possibilities of this blanking method for your work.

Send Prints or Samples for Quotations

Dayton Rogers Manufacturing Co.
1115 So. Third Street, Minneapolis, Minn.

The Conway One-Revolution --CLUTCH--



(Compression Type)

The Conway One-Revolution Clutch is manufactured to suit a specific field of "Knock Out" start and stop service.

It is made in either Expansion or Compression type, is a rugged, dependable and simply adjusted mechanism, that will give satisfactory performance on any type of service in its scope.

As far as we know, we are the only manufacturers who list a group of sizes of One-Revolution or "Knock Out" Clutches.

THE CONWAY CLUTCH CO.

1541 Queen City Ave., :: Cincinnati, Ohio

Manufacturers of the splendid Conway Disc Clutch

SPEED

SPOT WELDERS

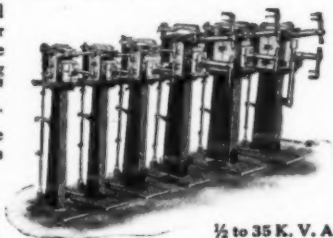
Made foot-operated and variable speed automatic motor drive, no change gears, for welding from .0005 to $\frac{5}{8}$ " combined thickness.

Welders for Fine Work Priced As Low As

\$55.00

Submit Your Problems

OVER 20,000 IN USE



$\frac{1}{2}$ to 35 K. V. A.

EISLER ELECTRIC

763 So. 13th Street,

NEWARK, N. J.

Distributor and Dealer Connections Desired



REDUCE

Your

Grinding Costs

Two-Thirds

with the

COLONIAL Broach Sharpener

Specifically designed to sharpen broaches, the COLONIAL turns out the equivalent of a NEW tool—grinding the teeth and hard-to-get-at undercut more economically and correctly than any other machine can possibly do. Release your large, expensive grinders to the work they were intended for—use the COLONIAL and save time and money while producing better work!

Write for facts showing how YOU can save Money with the COLONIAL

COLONIAL BROACH COMPANY

147 Jos. Campau Ave.,

Detroit, Mich.



ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE

PLANNER and SHAPER TOOL

Takes cutter bits that any mechanic can quickly grind from stock shapes of High Speed Steel. Holds cutters securely at one of seven angles, at any desired clearance—permits the machining of many surfaces without shifting work on table.

With cutter and holder reversed it makes an excellent "goose neck" tool for cutting keyways.

Write for
Catalog B-27



ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

308 N. Francisco Ave., CHICAGO, U.S.A.



BURKE

Economize Your Bench Drilling

The Burke No. 2 Bench Drill belongs on your bench. It's fast, accurate and economical, and has a range from 0 to 9/16". Sturdily and simply built, it stands up under the most severe usage; upkeep costs are practically nil. Spindle is counterbalanced, gears are spiral cut and silent, frame is cast in one piece for perfect alignment. And there are other features throughout that are equally outstanding.

*Belt or motor drive.
Ask us for full details.*

The Burke Machine Tool Co., 297 E. 16th St.,
Conneaut, Ohio

THE WILDER Interchangeable COUNTERBORE

**Change Cutting
Tools While
Machine is
in Opera-
tion**



With the new WILDER Quick Change feature it's an easy matter to remove or install the cutting tool while machine is in operation. All you do is lift up the knurled chuck which releases the lock driving plunger and allows cutting tool to drop out or be easily installed. Use a WILDER Interchangeable Counterbore and note the increase in output per grind.

Write for Complete Information and Price

THE WILDER TOOL CO.
GREENFIELD, MASS.

VANDERBEEK UNIVERSAL JOINTS



Are used in all kinds of machines where high grade Joints are needed. The very highest grade of workmanship goes into our Joints.



We specialize on Joints

for instrument work and light drive as well as airplane use. Hundreds of thousands of Vanderbeek Universal Joints are in daily use.

Write for Prices and State Your Quantities

American Tool Works, Inc.
25 High St., Hartford, Conn., U. S. A.

ATLAS ARBOR PRESSES

Increase the production of your broaching, forming, straightening, and assembling operations with an Atlas Power Press, No. 55 illustrated, capacity 10 tons. Ram travel 27 feet per minute.

Write for Bulletin

ATLAS PRESS CO.

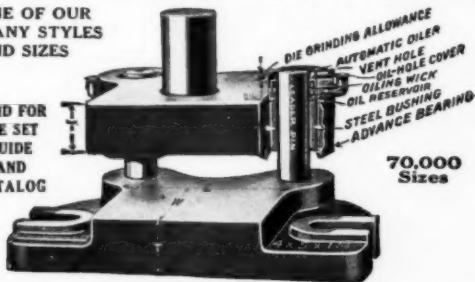
Department B,
KALAMAZOO, MICH.



Automatically Oiled Die Sets

ONE OF OUR
MANY STYLES
AND SIZES

SEND FOR
DIE SET
GUIDE
AND
CATALOG



E. A. BAUMBACH MFG. CO.

GENERAL OFFICE AND WORKS

1810 South Kilbourn Ave., CHICAGO, ILLINOIS

Sales and Engineering Offices—Principal Cities U. S. A. and Canada

GEARS

"THEY
LIVE



ON
THE
JOB"

All Types and Quantities. Standard or Special.

Massachusetts Gear & Tool Co.
36 Nashua St. Woburn Mass.

GEARS

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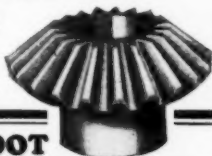
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Gear Corp.**

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UP TO
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**Etches-Demagnetizes-
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THE LUMA is a compact, handy, portable tool—an electric pencil for marking hardened and ground steel—a thorough demagnetizer—a carbon point for light annealing and soldering. Easy to use—plugs in any light socket. Effects surprising savings.



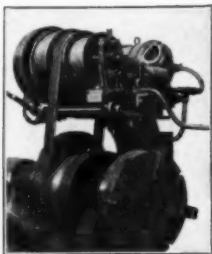
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Individual Motorization

INDUSTRIAL concerns who are using our services and parts report power savings running from 20 to 70%, and in addition have discovered that the efficiency of their entire plant is increased from 10 to 50%. H & Z Individual Motor Drives eliminate overhead drive shafting. We have over 2000 patterns accumulated from ten years experience in equipping machine tools and textile mills with Individual motor Drives.

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Every minute spent by your high-priced mechanics in digging out broken taps is a dead loss. When a tap breaks it should be *removed quickly with*

The Walton Tap Extractor

This handy tool has steel fingers which back out the tap *without injuring the threads*. It will save you many hours in the course of a year—paying for itself over and over again. Made in three and four-flute styles.

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Malleable iron body; working parts hardened. Steel shaft and plunger. Die cannot lose alignment with punch. All parts interchangeable. Built for hardest, toughest work. Weight 70 lbs.

PRICE \$40

Extra Punches, 20 cents each; extra dies, 30 cents.

Capacity $\frac{1}{2}$ " holes through $\frac{3}{16}$ " steel; $\frac{13}{32}$ " through $\frac{1}{4}$ " steel. Can also be made for up to $\frac{7}{8}$ " holes through thinner metal. Punches and dies in stock from $\frac{1}{8}$ " to $\frac{1}{2}$ ".

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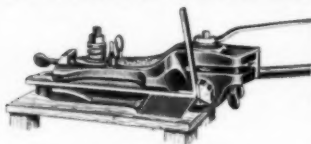
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MACHINE CO.**

(Est. 1890)

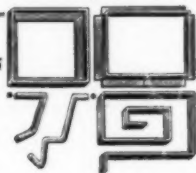
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**Band and Angle Iron
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Manufacturers of

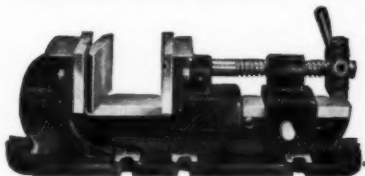
**Automatic Grinding and Polishing Machines,
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Send for illustrated circulars and prices.

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'Most Efficient Vise Made'



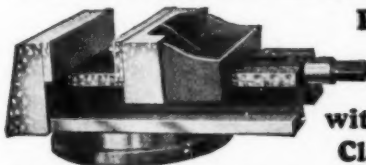
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Vise**

THAT will also be your verdict when you know its power, capacity, adaptability and lightning speed of setting. Designed by a mechanic for mechanics. The independent swivel jaw holds taper and irregular work with a bull-dog grip. The Gem saves time in shop and factory. The folder shows its use in drilling and milling operations.

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**PLUNKET
Shaper
Vise**

**with Circular
Clamp Base**

The Circle Clamp Base Shaper Vise is the same as the Drill Press Vise with the exception of the lugs on the sides and ends. The Circle Base is attached to vise by 4 cap screws which holds it firmly. Base is clamped on top of shaper table by 4 offset clamps furnished for that purpose. Base has center pin on bottom to fit hole in table top and prevents vise from slipping, also providing pivot on which to swing vise to any angle.

See next issue for Square Base Shaper Vise.

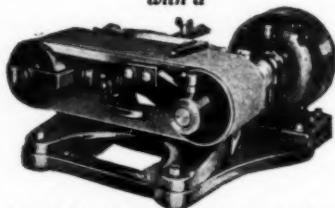
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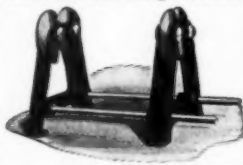
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Greatest distance bet. standards	20"	30"	30"	66"	88"	20'
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight	45	90	150	350	650	
Code	Bend	Bid	Bis	Bib	Ben	

Any of above can be furnished with longer shafts

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This **PORTABLE ELECTRIC BLOWER** delivers **DRY** air, free from oil, at high velocity, yet low pressure. It safely, quickly, and efficiently cleans motors, generators, converters, shafting, overhead piping, etc.

Instantly convertible for suction-cleaning stocks, bins, auto interiors, furniture, overhead pipes, shafts, line shafting, etc., or for spraying insecticides, deodorants, paints, lacquers, etc.

Reduces fire risk and danger of "shorts" and "burnouts."

No installation. Attach to any light socket. Less than 2¢ an hour to run. Ball bearings—no oiling. 4 models.

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Try it 10 days

Then pay for it, or return it at our expense.

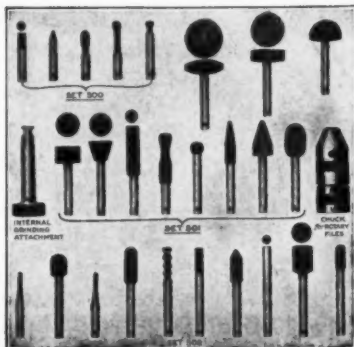
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*Ball-bearing
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**FLEXIBLE
MACHINES**

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All shapes and
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**Makes Every Riveting Job
Both Easy and Satisfactory**

Its speed of one perfectly formed rivet every operating second—the convenience with which it places rivets in previously hard-to-get-at places, and its fool-proof construction that admits rapid operation by unskilled labor, all combine to make it a tool that you cannot overlook in figuring economical shop processes.

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You Save Time and Money



**When You Equip Your
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The Canton Portable Crane

One man with a Canton Crane can do the work of six to ten men and do it without the usual risks.

Canton lifts any shape or size piece weighing up to 6000 pounds, moves it anywhere, and places it in the position you want it.

Safety friction brake holds the load at any point insuring safety to the operator and the work.

*Made in several sizes,
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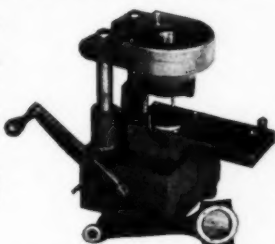
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Connecting Rods.

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Q-C Method



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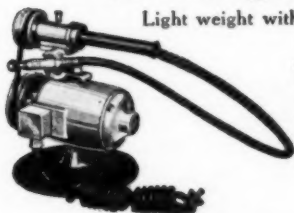
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Light weight with ABUNDANT POWER

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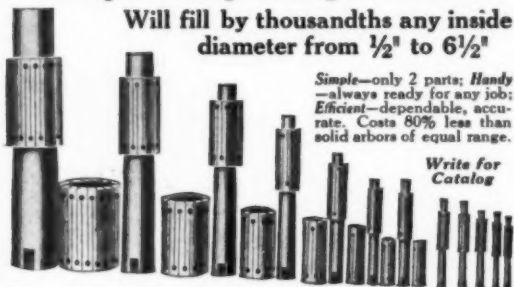
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Speed ranges 300 to
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Simple—only 2 parts; *Handy*—always ready for any job; *Efficient*—dependable, accurate. Costs 80% less than solid arbors of equal range.

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Townsend Centrifugal Multi-Blow Riveters

THE ONLY MACHINE THAT
IMITATES HAND RIVETING IN
EVERY WAY.

NUMEROUS TYPES FOR ALL
KINDS OF WORK.

Round and Flat heads, hollow and cheek rivets from .008" to $\frac{5}{16}$ " without distortion or breaking of fragile material. In places inaccessible by any other method.

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MORE PRODUCTION

With Higher Speed, Less Spoiled Work, Fatigue or Broken Taps



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**TAPPING
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Certainly You Can Be Guided by the
Judgement of Hundreds of Factories
Who Use ETTCOS.

FIVE SIZES—UP TO ONE INCH TAPS

Try Ettcos at Our Expense. We have a nice New Circular ??

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“Utility Tools”

Cut Replacement Costs

*This Interchangeable Counterbore and Spot Facer
is equipped to serve you better, longer
and with greater economy—because of*

Four Points of Superiority

- (1) Pilots cannot break or twist off.
- (2) Cutters cannot break and are easily removed.
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- (4) The drive is the utmost in simplicity and power.

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Scratch Awl & Drift Pin No. 16. Roller Bearing Punch



Drop Forged—Alloy Steel-Hardened

No. 5. Jr. Punch



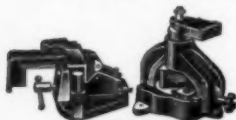
Capacity $\frac{1}{4}$ " thru 16 gage
Weight 2½ lbs.

No. 0. Solid Set



Made from High Grade
Tool Steel

No. 50 Angle Iron Mitre Notcher and No. 51 Angle Iron Bender



Capacity will shear Mitre in
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Weight of Mitre Notcher 55 lbs.
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Can be
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with or
without
work table



Operator works
in front of
machine.

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Hollow Punch Set



Self Centering Locating Spring Point.
Made in 3 sizes.

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Roller Bearing
Cap. $\frac{3}{16}"$ Thickness, Throatless
Drop Forged

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"Cost per Hole!"

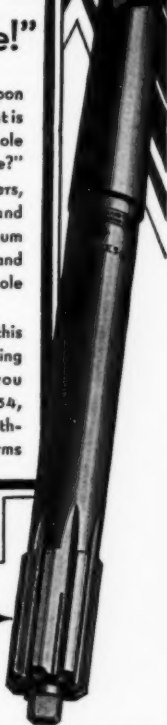
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Performance year after year in leading metal cutting plants has established the real value of Sunoco. Users who accurately check the cost of tool steel, the amount of time lost in re-sharpening tools and the number of rejects, are proving that Sunoco not only shows a decided saving in these items but that Sunoco also aids Machine Tools in producing better work where economy, speed of production and quality of finish are the requirements of efficient operation.

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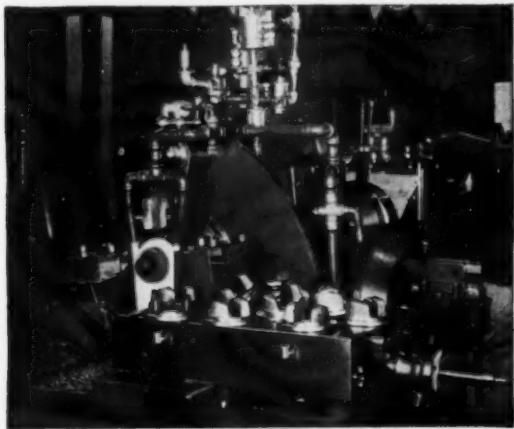
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MACHINE: SUNDSTRAND 12 IN. "STUB" LATHE.
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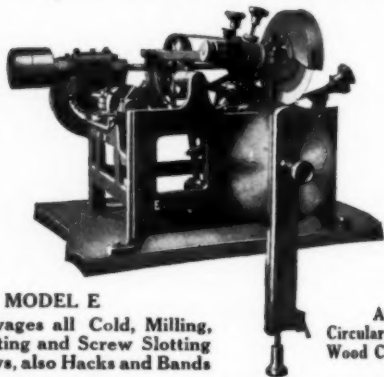
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Combination Grinder

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MODEL E

Salvages all Cold, Milling,
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Saws, also Hacks and Bands

And all
Circular and Band
Wood Cutting Saws

**One years saw purchases can be
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Manufacturers of the largest line of Saw Filers made in U. S. A.

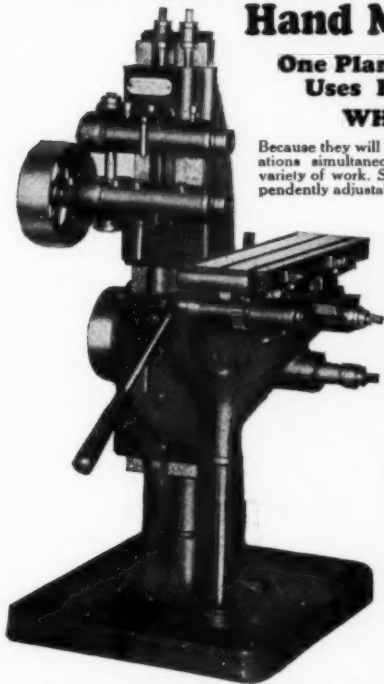
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Uses Fifty—
WHY?**

Because they will handle two operations simultaneously on a great variety of work. Spindles are independently adjustable vertically.



Slides move freely without cramping, since all guiding surfaces are long in proportion to their width. All sliding members are fitted with adjustable gibs, and can be securely clamped without disturbing adjustment.

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Sheldon Machine Co., Halfway Exchange Bldg., Chicago, Ill.
Wilson, E. R., Buffalo, N. Y.

Arbors, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Back Spot Facing Bars and Cutters

Wilder Tool Co., Greenfield, Mass.

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Jarvis, Inc., Benj. E., Newark, N. J.
Porter Cable Machine Co., Syracuse, N. Y.

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Excelsior Tool & Mch. Co., E. St. Louis, Ill.
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Hagen, H. J., 109 Lafayette St., New York

Chucks, Drill and Tap

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Chucks, Magnetic

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Chucks, Quick Change

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Foot-Burt Co., Cleveland, O.

Drilling Machines, Portable Electric

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Mail Tool Co., 7730 S. Chicago Ave., Chicago
Standard Electrical Tool Co., Cincinnati, O.
Strand Co., N. A., 5001 N. Lincoln St., Chicago

Drilling Machines, Post

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Standard Electrical Tool Co., Cincinnati, O.

Drilling Machines, Radial

Standard Electrical Tool Co., Cincinnati, O.

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Drilling Machines, Sensitive

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Burke Machine Tool Co., Cincinnati, Ohio
Foots-Burt Co., Cleveland, O.
Leland-Gifford Co., Worcester, Mass.

Drilling Machines, Vertical

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Foots-Burt Co., Cleveland, O.
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Drives, Grinder

Hertler & Zook Co., Belleville, Pa.

Drives, Lathe

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Hertler & Zook Co., Belleville, Pa.

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Standard Electrical Tool Co., Cincinnati, O.

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Chicago Gear Works, 769-773 W. Jackson
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Massachusetts Gear & T. Co., Woburn, Mass.

Gears, Herringbone

Crofoot Gear Corp., C.E., So. Easton, Mass.

Gears, Rawhide, Bakelite, Fabrolit

Chicago Gear Works, 769-773 W. Jackson
Blvd., Chicago
Crofoot Gear Corp., C.E., So. Easton, Mass.

Grinder, Air

Madison-Kipp Corp., Madison, Wis.

Grinding Machines, Angle Plate

Cincinnati Electrical Tool Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Belt

Cincinnati Electrical Tool Co., Cincinnati, O.
Porter-Cable Machine Co., Syracuse, N. Y.
Standard Electrical Tool Co., Cincinnati, O.
Wells Sales Corp., 96 Warren St., New York

Grinding Machines, Bench

Cincinnati Electrical Tool Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Mchs., Combination Buffer

Cincinnati Electrical Tool Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Cutter, Reamer and Tool

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National Machine Tool Co., Racine, Wis.
Standard Electrical Tool Co., Cincinnati, O.
Surfacer Mfg. Co., 2486 Irving Park Blvd.,
Chicago, Ill.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Cylindrical

Thompson Grinder Co., Springfield, Ohio

Classified Finding Index

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Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Disc

Porter-Cable Machine Co., Syracuse, N. Y.
Standard Electrical Tool Co., Cincinnati, O.

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Grinding Machines, Floor

Cincinnati Electrical Tool Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Internal

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Standard Electrical Tool Co., Cincinnati, O.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Center Electric

Cincinnati Electrical Tool Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Lathe Electric

Cincinnati Electrical Tool Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Portable Electric

Cincinnati Electrical Tool Co., Cincinnati, O.
Hall Tool Co., 7730 S. Chicago Ave., Chgo.
National Machine Tool Co., Racine, Wis.
Porter-Cable Machine Co., Syracuse, N. Y.
Standard Electrical Tool Co., Cincinnati, O.
Strand Co., N. A., 5001 N. Lincoln St., Chgo

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Graham Manufacturing Co., Providence, R. I.

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Lathes, Engine

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Porter-Cable Machine Co., Syracuse, N. Y.

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Miller, 12" Cincinnati, mfg. type, s. p. d., vise and pump 125.

Miller, Briggs, G. & E. manufacturing, 16" 125.

Miller, No. 5 Becker vertical, no rotary 500.

Miller, No. 7 Becker, Lincoln type 125.

Miller, No. 21 Garvin power feed, oil pump 150.

Miller, Hendey, Lincoln type 100.

Miller, No. 12 Brown & Sharpe production type 100.

Miller, Ingersoll slab, 42" x 36" x 8" 1,000.

Pianer, 24x24x8 Fitchburg, 1 head 200.

Pianer, 36" x 36" x 12' Cincinnati with 2 heads 1,200.

Press, No. 30A, Perkins o. b. i. 2" stroke, 1500 lbs. 150.

Press, No. 4, Niagara o. b. i. 2" stroke, 1700 lbs. 200.

Press brake, 10' Ohl power, No. 10 gauge 1,500.

Saw, No. 5 Marvel high speed 6x6 125.

Screw machine, No. 1, B. & O. plain head, 13/16" capacity 225.

Separator, Curtis oil, 1 bushel 275.

Separator, oil, American 1 1/2 bushel 300.

Shaper, 20" Cincinnati, crank, back geared, vise and c/s 550.

Turret lathe, 2 1/2 x 10" Milholland, for chuck and bar work 650.

Turret lathe, 34" x 36" Acme with chucking equipment 500.

Turret lathe, 24" Steinle, 4" hole, side carriage 300.

USED AND REBUILT MACHINERY

FOR SALE BY

West Penn Machinery Company

1208 House Building,

Pittsburgh, Pa.

Automatic, No. 0 Brown & S. b. d.
Air compressors, 30 to 2500 cu. ft.
Blender, pipe, No. 6-C Wallace, m. d.
Blowers, No. 3 North American.
Bolt cutter, 2 1/2" Acme, sgl. hd. m. d.
Bolt cutter, 1 1/2" Landis, dbl. head.
Bolt cutter, 1 1/2" Landis, 3 hds., m. d.
Bor. mill, 48" Bullard Maxi. 2 hds.
Boring mill, 72" Betts, 2 hds. m. d.
Boring mill, 10'-16" Betts, 2 hds. m. d.
Boring mill, 16'-24" Niles, 2 hds. b. d.
Bor. mill hor., No. 1 Cleve. 2 1/2" bar.
Boring mill, floor type, 4" Bement.
Brake, 5' press type, 10 gauge.
Brake, 6' hand, 16 gauge.
Brake, 8' D. & K. 10 ga. box & pan.
Brake, 10' Dres & K. 3/16", m. d.
Bulldozers, Nos. 2, 4, 6, 28, 29 & 30.
Die threader, Smalley General, dies.
Dieing mchs., 25 & 50 ton H. & W.
Die sinker, No. E-3 Keller, m. d.
Drill, 21" Rockford, tap. att. m. d.
Drill, No. 3 Defiance, No. 5 M.T. m. d.
Drill, radial, 2 1/2" Fosdick, t. a., b. d.
Drill, radial, 4" Prentice, t. a., b. d.
Drill, radial, 5" Dreses, motor on arm
Drill, radial, 6" Dreses, s. p. d.
Flanger, McCabe, 1" capacity, dies.
Gear cutters, 11", 24" & 36" Gleason.
Gear cutter, spur, 36" x 16" Newark.
Gear hobber, No. 3 Sch. & Sch. 118".
Gear planer, 20-ft. Gleason, m. d.
Gear tester, 18" Gleason, bevel.
Grinder, centerless, No. 2 Cincinnati.
Grinder, internal, No. 70 Heald.
Grinder, rad., 14" M. & D., m. d.
Grinder, surface, No. 16 Blanchard.
Grinder, surface, 14" Arter.
Grinder, surface, No. 2 Reid, b. d.
Grinder, tool & cut., No. 2 Walker.
Hammer, Blacker, power, 35-lbs.
Hammer, 60-lb. Bradley, cush. helve.
Hammer, 200-lb. Bradley, cush. helve.
Hammer, 200-lb. Bradley, compact.
Hammers, Nos. 3-B, 4-B, 4-N Nazel.
Hammers, steam, 600 lb. to 6000 lbs.
Jacks, 35-ton Barrett, ball bearing.
Keyseater, No. 2 Mitts & Merrill.
Lathe, 16"x16" Le Blond, q. c. g., d. b. g.
Lathe, 20"x8" Hendey, tie bar, t. a.
Lathe, 24"x16" Bridgeford, g. hd. m. d.
Lathe, 36"x24" L. & S. selec. grd. hd.
Lathe, 48"x26" Bridgeford, g. hd. m. d.
Lathe, turret, No. 6 Warner & S.
Lathe, turret, 18" Libby, m. d.
Lathe, turret, 24" Steinle, 6 1/4" hole.
Lathe, tur., 26" Gisholt, 9" hole. m. d.
Lysholm tables, 72" x 30".
Miller, plain, No. 2-A Milwaukee.
Miller, universal, No. 3 Le Blond.
Miller, vertical, No. 2 Cincinnati.
Miller, slab, 48"x48"x20' adj. rail.
Nut tapper, 6-spindle Acme, 2".

Nut tapper, 10-spindle Acme, 1 1/2".
Pipe machine, 2' Landis.
Pipe mchs., 8" Oster, 8" Williams.
Planer, 30"x30"x16" Woodward & P.
Planer, 48"x48"x18" Cinti., belt drive.
Planer, o. s., 36"x36"x16" D. & H.
Planer, o. s., 48"x48"x16" D. & H. m. d.
Planer o. s. 60"x60"x14" Cleve. m. d.
Planer, rotary, 45" Niles, m. d.
Presses, arbor, Nos. 7, 17 Greenerd.
Press, o. b. i. Ferracute Cl, 3" stroke.
Press, o. b. i. CG-6 Ferracute, 12000 lbs.
Press, hydraulic, 1,000 ton United.
Press, hyd. 100-ton Watson-Stillman.
Press, s. s., 13"x19 1/2", 2" stroke.
Press, No. 75 Toledo, 1 1/2" stroke.
Press, No. 72 Bliss, t. r. 10" str.
Press, No. 92 B Toledo, d. c. 2 1/2" str.
Press, No. 6 Bliss, d. c. 6" stroke.
Press, No. 95-C Toledo, 4" str., d. c.
Press, No. 96-A Toledo, d. c. 5" str.
Press, screw, No. 87 Niagara.
Press, wheel, 150-ton Schaffer.
Punch, hor., Cleveland, 1" thru 1".
Punch, hand, Shatz, bar and angle.
Punch & sh. No. 6 L. & A. 1" thru 1 1/2".
Punch, multiple, No. 5 H. & J. 10".
Riveters, air, hammer, spinning.
Rolls, bending, 12"x1 1/2" H. & J. d. e.
Roller, thread, Nos. 40 & 50 W. - F.
Sand blast, Pangborn, 90", ER-1.
Saw, band, metal No. 2 Klem, m. d.
Saw, cold, 48" Newton, m. d.
Saw, friction, Nos. 2 & 3 Ryerson.
Saw, hack, No. 5 Marvel, b. d.
Saw, univ., Peerless, 6" x 6", m. d.
Screw mch., No. 2 B. & S. wire feed
Shapers, 16", 20", 24" & 36" G. & E.
Shaper, 24" Smith & Mills, m. d.
Shaper, 48" Morton, draw cut.
Shear, angle, 6" x 6" 1 1/2" Cleveland.
Shears, alligator, 1 1/2", 2", 3" & 4".
Shear, bevel, Lennox 1".
Shear, gang, splitter, No. 235-A Bliss.
Shear, Cleveland "W" 3" capacity.
Shear, rotary, 1" Ryerson.
Shear, 36"x16 ga. Pexto, foot.
Shear, squaring 8"x16 ga. Ohl.
Shear, 8 1/2" x 1 1/2" Garrison, 24" gap,
motor drive.
Shear, 12" x 1 1/2" Wheeling, 31" gap,
motor drive.
Slotter, 18" Dill, m. d.
Straightener, 60" Nat. 14 ga. 17 rolls.
Straight'r, 48" United, 16 ga. 13 rolls.
Straightener, 1 1/2" round Abramson.
Straightener, 4" round Abramson.
Straight'r, No. 2-AK. & R. 20 roll, m. d.
Swaging mche., No. 5-A Standard.
Testing mchs., 50,000 & 100,000-lb.
Tumbling barrel, 18"x36", b. d.
Upsetters, 1" to 6".
Welders, spot and butt.

USED AND REBUILT MACHINERY FOR SALE BY

Marr-Galbreath Machinery Co.,

58 Water St., Pittsburgh, Pa.

Abrasive cutter, cap. 3½" tubes.
Air comp. 6, 15, 21, 45, 107, 129, 213 cu. ft.
Auto. lathes, 14" Fay, belt and m.d.
Band saw, 36" Crescent, t. t.
Barrel, 19"x24", tile lined.
Bender, hand, 3/16"x1" Wallace.
Bender & straight'r, cap. 12" beams.
Blower, No. 40 Connersville.
Blowers, Root No. 3, 500 c. p. m.
Bolt cutter, 1½" Geometric, m. d.
Bolt cutter, 1" Wells Bros., m. d.
Bolt cutter, 1" H. & G., motor 3 ph.
Boring mill, 42" Bullard, 2-hds., s.p.d.
Boring mill, 30" King; and Bullard.
Boring mill, 14" Betts, 2 hds., m. d.
Hor. mill, horiz. 24" Clev., g.b.s.p.d.
Brake 10" Keene toggle, 16 gauge.
Brake, 8"x12 ga. power, Chicago.
Brake, pan, 60"x14 ga. Chgo. hand.
Brakes, hand, 10", for 18 ga. Robinson.
Broaching mch., No. 3 LaP. Hudson.
Broaching mch. No. 2 Oil Gear, m.d.
Broaching mch. Nos. 1 & 3 LaPointe
Chuck, Head magnetic 14"x40".
Chuck, Walker magnetic, 6" diam.
Cold header, 7" W-F., solid die.
Cold saws, Nos. 11½ and 12 Higley.
Crimping roll, 6½" Robinson, 16 ga.
Drills, 14" T. & F., 2 and 3 spindle.
Drills, multiple 10 and 20 spindle.
Drills, No. 14 Silver, hand post.
Drill, 24" Rockford, g. f. taper att.
Drill, radial, 5" Western, g.b., m. d.
Drill, radial, 3½" C-B., g. b. for m. d.
Drill, sensitive radial, 3" Amer. t.a.
Driller, Detroit 5-spindle semi-auto.
Exhauster, with 1½ h.p. motor, 1/60.
Filing mch., Oliver, 1 h. p. mtr. 3/60.
Folders, bench 30" hand (4).
Forging mchs., 1½", 3" & 3½" (steel).
Furnace, rotary annealing, 12"x8".
Furnaces, oil tempering, 10"x10"x10".
Gear hobbers, No. 1 Adams "Farw.
Gear hobber 12" S-S "TRO".
Gear and pinion cutter, No. 3 Sloan.
Gear speed reducer, 3 h. p. 50:1.
Grinder, No. 1½ Landis universal.
Grinder, No. 1 LaSalle surface.
Grinder, 18-D. Rowbottom, o.h.b.b.
Grinder, No. 1 Norton tool & cutter.
Grinder, Landis 6"x30" hyd. cyl. m.d.
Grinder, disc, 30" Bealy No. 17.
Groover, 30" Niagara, hand.
Hack saw, 6x6" Marvel, motordrive.
Hack saw, 12"x12" Racine.
Hack saw, Peerless, 6" univ. shaping
Ham., 400 lb. No. 10 Beaud. pwr. b.d.
Hammer, 800 lb. Erie stm. forg. s.f.
Hammer, 1000 lb. Chbg., steam drop.
Hoists, chain, 1 to 8-tons capacity.
Keyseaters, No. 2 Baker.
Keyway cutter, 24" Morton, cap. 2½".
Lathe, Sundstrand 7" Mfg. type.
Lathe, 14"x6" Hendey, m. d., t. a.
Lathe, 14"x6" L. & S. q. c. g., t. a.

Lathe, 16"x6" Monarch, q. c. g.
Lathe, 14"x6" W.-B., q. c. g.
Lathe, 16"x8" S. Bend, 2 cks. & c/s.
Lathe, 18"x8" L. & S. sel. hd. m.d. t.a.
Lathe, 18"x8" D. B. G., q.c.g. chuck.
Lathe, 20"x12" Monarch, q. c. g.; t.a.
Lathe, 22"x10" American, q.c.g.; t.a.
Lathe, 16"x11" Lehman, q. c. g., t. a.
Lathe, 30x15" Lehman, gd. hd.
Lathe, 32"x16" Psh., q. c. g., chuck.
Lathe, 32"x20" geared head, m. d.
Miller, No. 28 Ohio pl. auto. feeds.
Miller, plain No. 3 B. & S.
Miller, No. 3 LeBlond, plain.
Miller, universal No. 4 B. & S.
Miller, vert., Becker, Nos. 3 & 5-B.
Miller, auto. No. 2-M P. & J., s.p.d.
Motor, 3 h. p. 500 v. d. c., 1500 rev.
Motor, 20 h.p. 220 v.d.c., 350/1050 rev.
Motor, 25 h.p. slip rg., 3/60/220/1160.
Pipe benders, 2" Chgo & Wallace.
Pipe mche., 16" EC & B., 6" Oster.
Planer, 30"x10" W. & P., 2-heads.
Press, 76-D Pexto, d. c., 10,000 lbs.
Press, hyd. 50-ton, Watson-Stilman
Press, No. 14 Toledo horn.
Press, F-162 Ferracute, foot power.
Presses, No. 3 Bliss, punch type.
Presses, o.b.i., No. 1 Toledo.
Press, No. 19, Bliss o. b. i.
Press, o. b. i. No. 1 Sidney, 1000 lbs.
Press, o. b. i. No. 3 Niagara, 1½" str.
Presses, foot, No. 67 Bliss, pendulum.
Press, No. 6 Perkins, s. s., 4000 lbs.
Presses, No. 67 Niagara, screw.
Punches, s. e. 36", 45", 60", 72" thts.
Punch, s. e., Badger, 7" thrt., 7"x8".
Punch, No. 13 Niagara hand power.
Punch, Rapid, 20" tht., 1"x1½", m. d.
Punch & shear, d. e. 16" thts; 1½"x1"
with angle & barshear blades, m.d.
Punch & stake riveter, No. 123-C.
Toledo boilermakers.
Reduction gears, various sizes.
Riveter, Grant No. 101, 5/16" cap.
Riveters, 1-AA, 3-A, 5½ B, hi. speed.
Rolls, 30"x14", 31½"x3"
Rolls, hand, 31"x2" P. S. & W.
Screw machine, No. 0G B. & S.
Screw mch., 10½" P. & W., wire feed.
Shaper, 7" Rhodes, vert. ram. m. d.
Shaper, 16", Cin., b. g., crank.
Shaper, 24" G. & E., gear box, s.p.d.
Shaper, 25" S. M., b.g., crk., A-I.
Shear, 42"x1½" Niagara, 18" gap.
Shears, 1½" & 1½" Lennox, throatless.
Shear, foot, 30"x20 gauge.
Shear, foot, 42" Niagara 16 ga., h. d.
Shears, Alligator, 1½", 2", 2½" & 3".
Shear, alligator, No. 2 Badger, 2".
Shear, rotary, 12" thrt., cap. 10 ga.
Shear, rotary, 16 ga., Yoder, 24" thr.
Shear, squaring, 8"x14 ga. power.
Shear, squaring, 60"x14 ga. Canton.
Shear, squaring, 30"x18 ga., F. & P.

USED AND REBUILT MACHINERY

Marr-Galbreath Machinery Co.—Continued

Shear, 10'x16 ga. Ohl power.
 Slotter, 15" Drill, for motor drive.
 Tappers, No. 2 Garvin, vertical.
 Thread. mch., 4" Geometric.

Tube cutter, Fox 2 1/2" cap.
 Turret lathe, 28" Gisholt, 9 1/2" h. s.
 Turret lathe, 26" x 7 1/2" h. s., Libby.

FOR SALE BY

M. A. Wertman Machinery Co., 427 Penton Bldg., Cleveland, Ohio

Automatic, No. 24 New Britain chucking, complete, perfect condition.
 Brake, Ohl 8'x10 gauge, press type, good as new, bargain price.
 Drill, Allen No. 2, 4-spindle automatic feed, late machine.
 Gang slitter, Yoder G-36, lot of cutters and spacing collars, fine condition.
 Headers, cold, Nos. 2, 3 and 4 Manville s. d. d. s., ready for service.
 Lathe, Rivett No. 505 NS precision bench, lot of equipment, can't be beat,
 Lathe, Cincinnati 16" x 8" q. c. g., fine condition, very low price.
 Milling machine, No. 3 Kemp Smith universal, complete equipment.
 Oil separator, No. 500 Leon Bartlett, m. d., almost new, 1.8 bushel capacity.
 Press, No. 6 Toledo, o. b. i., 4" stroke.
 Screw machine, No. 2 Bardons & Oliver g. f. h., power feed, collets.
 Sprue cutter, No. 5 Coleman nearly new, capacity 1"x1 1/2" brass.
 Welders, 300 and 600 amp arc.

FOR SALE BY

McDonald Machinery Co.,

Air compressors, Curtis 10x10 m. d.
 Bolt mchs., Landis & Acme 1 1/2".
 Boring mill, Lucas No. 21 horizontal
 Boring mills, 4 Bullard 42" low price.
 Brake, D. & K. 6' 10 gauge, power.
 Cut-off mchs., 4 Davis 6" capacity.
 Drill, Moline 4-spindle and 32-spdl.
 Drill, Foote-Burt 4-sp. No. 2 gang.
 Drill presses, Allen and Sipp 4-spdl.
 Drills, Cincinnati-Bickford 3' & 3 1/2'
 radials, gear box drive.
 Drills, Sipp 1-spindle, h. s., b. b.,
 H. & W. 2 spdl.; H. & W. 6-spdl.
 Drills, 20", 24", 26 & 28" b. g., & tap.
 Gear hobber, G. & E. 24".
 Grinders, B. & S. No. 2 universal;
 B. & S. No. 2 surface, complete.
 Grinders, Landis No. 1 1/2, int., Landis
 16"x42" universal.
 Grinder, Pratt & Whitney vert. surf.
 Hack saws, 6x6 Racine Peerless h. s.
 Keyseater, Mitts & Merrill No. 2.
 Lathes, Hendey 14"x6" q. c. g. yoke
 head; Davis 22"x10" q. c. g.;
 Sidney 16"x6" q. c. g. LeBlond
 16"x8" Whitcomb-B. 22"x8" q. c. g.
 Monarch 16"x8"; C. & J. 15"x8";
 Superior 13"x8"; L. & S. & Cinti.
 16"x6", q. c. g.; American 22"x10"
 q. c. g. geared hd.; American 16"x6"
 q. c. g.; Lehmann 18"x7" q. c. g.;
 40 assorted sizes, quick and loose
 change gear, G-K 24"x10" l. c. g.
 Milling machines, Van Norman
 No. 7 duplex; Ohio No. 25 plain,
 LeBlond No. 3-H; Brown & S.
 No. 3; B. & S. No. 3-B pl., s.p.d.;

1535 N. Broadway, St. Louis, Mo.

American No. 1 1/2; Kemp Smith No. 1
 Cleve. No. 7 pl.; Ohio 24; Hendey
 1-B; Kemp. No. 3; Cin. & B. & S.
 No. 1 1/2; Ohio No. 29 universal;
 B. & S. No. 5 vertical; Cincinnati
 18" mfg; Becker No. 2-H vertical.
 Milling and drilling mchs., Knight
 No. 1 1/2 with power feed, vertical.
 Pipe machine, Curtis 3", motor dr.;
 Merrill 4"; Curtis 2 1/2" to 12" m. d.
 Planers, Gray 23"x23"x6", 1 head;
 Cincinnati 36"x36"x15" 2 heads;
 Pond, 36"x36"x12" table, 15' bed;
 2 heads; Flather Gray 24"x24"x6".
 Punch presses, Bliss No. 1 1/2 & Swaine
 No. 63 straight side geared, Federal
 Nos. 1, 2, 3 and 4; Bliss No. 19;
 Swaine No. 37; Sidney No. 3, o. b. i.
 Screw machine, Cleveland 2 1/2" auto.;
 P. & W. No. 2 1/2 hand; Foster No. 2
 hand; Woods No. 2 tilted turret,
 Milholland No. 4 b. g. hand; Foster
 No. 7 hand b. g.; W. & S. No. 1.
 Slotters, P. & W. 6"; N. B. P. 10" vert.
 Shapers, S. M. 16"; 24"; Queen City
 24" back geared; G. & E. 16" b. g.;
 Niles traveling head; Milwaukee
 16" b. g.; Walcott 20" b. g.; S. & M.
 & Ohio 26" b. g.; Ohio 16", Cin-
 cinnati 20", b. g.; Rhodes 7"; Queen
 City 16" b. g.; Potter & J. 16".
 Shears, 60" thrt. rotary slitting, (2).
 Spot welders, 5, 7 1/2, 10, and 20 k. w.
 Square shears, Niagara 62" power.
 m. d. 18-ga.; Ohl 8" power 16 gauge.
 Thread miller, Lees-Bradner No. 3 E.
 Turret lathes, Warner & S. No. 2 A.

USED AND REBUILT MACHINERY

FOR SALE BY

Strafer Machinery Company.

14th and Provost St.,

Jersey City, N. J.

BENDING ROLLS.

H. & J. 10'6"x4" drop end, m. d. | B. S. 17'6"x4" drop end, m. d.

BORING MILLS

72" Sellers rapid trav. modern, m. d. | 51" N.-B.-P. speed box, s. p. d.

GEAR CUTTERS

No. 6 Cincinnati 72"x20" m. d. | No. 5A. Lees-Bradner. with motor.

PRESSES.

Ferracute 200 ton 82" double crank. | Ferracute S. G. 77. 70" blanking.

400 ton W. S. hydraulic 73"x20". | No. 44 Bliss double crank, 32".

MISCELLANEOUS.

Boring bars, portable, 4"x8". | Hammer, 400 lb. Chambersburg,

Compressor, I.-R. 8"x6" horiz. m. d. | steam-air.

Disc grinder, 30" ball bearing. | Pipe machine, Saunders 6", dies.

Squaring shear, Niagara 8"x10 ga.

FOR SALE BY

Brownell Machinery Co.,

150 Pine St., Providence, R. I.

BORING MILLS.

36" Bullard New Era, vertical turret. | No. 2 Binsse horizontal 34".

DRILLS.

34" American plain radial, s. p. d. | 3" American plain radial s. p. d.

3" Cincinnati-Bickford plain radial, | 20" Excelsior.

s. p. d. | 14" Excelsior.

GEAR CUTTERS AND GRINDERS.

No. 13 Brown & Sharpe gear cutter, | No. 2 Brown & Sharpe surface.

18x4, spur & bevel. | No. 13 B. & S. universal & tool.

No. 3 Brown & Sharpe gear cutter, | 20" Blount wet tool.

28x8, spur. | Grand Rapids twist drill C-2-T.

LATHES.

11"x8" South Bend q. c. g. | 24"x14" Whitcomb-Blaisdell, q. c. g.

14"x6" Hendey, draw-in attachment. | 24"x27" Fitchburg.

19"x8" Monarch q. c. g. | 30"x20" Fitchburg.

18"x12" Rahn-Larmon. | 18"x10" Fay & Scott pattern makers.

20"x12" Monarch, taper.

MILLING MACHINES.

No. 3 Cincinnati vertical, m. d. | No. 1 U. S. hand.

Model "AB" Becker vertical. | Newton adjust. rail type 20"x24"x8'

No. 13-B B. & S. manufacturing. | Ingersoll fixed rail type 24"x8'.

No. 0 Brown & Sharpe plain.

SCREW MACHINES & TURRET LATHES.

No. 4 W. & S. grd. friction hd., 14" | No. 00. No. 0-G, No. 2 Brown &

3"x36" Jones & Lamson flat turret. | Sharpe automatics.

SHAPERS AND PLANERS.

20" Cincinnati shaper, motor driven. | 15" Springfield.

16" Sellow tool room shaper. | 24"x24"x6" Whitcomb planer.

ROLLING MILLS

5x8 Ruesch. | Standard 3-stand Belgian Train 8x10.

10x16 Waterbury-Farrel foundry.

MISCELLANEOUS.

Centering mche., Whiton bench. | Power pr., No. 2 Bliss Consolidated.

Hammer, automatic drop 300 lbs. | Press, 150-tons Standard knucklejoint

Standard Machinery. | embossing. 4" stroke.

Hammer, jewelers, 900 lbs. M. & P. | Screw press, No. 3 Standard heavy

Hammer, 80 lbs. Bradley cushioned | hand.

helve forging. | Shaft straightener, Rockford 4" to 24"

Power press, No. 6 Waterbury over- | Slotter, Bement Miles, 12".

WOOD WORKING.

Band saw, 36" Crescent. | Jointer, 12" Oliver ball bearing.

Boring mche., White vert. & hor. | Planer, S. A. Woods 24"x8 sgl. cyl.

USED AND REBUILT MACHINERY

FOR SALE BY

Long Machinery Corporation	56 Pearl Street, Boston, Mass.
Automatic, Gridley 9/16" 4-spindle.	Lathe, Stark No. 3 1/2 c. r. & c/s.
Drill, Leland-Gifford 4-spindle.	Planer, D. & H. openside, 60"-72" x 16" table.
Engraving machine, Gorton No. 1-A.	Screw machine, Acme 2 1/2" x 11".
Grinder, Landis 6x18 pl. cylindrical.	Shaper, Potter & Johnston, 15" univ.
Hack saw, Millers Falls No. 90.	

FOR SALE BY

Geo. M. Bernstein & Co.,	221 No. Elizabeth St., Chicago, Ill.
Drill, one spindle Leland-Gifford, h. s., b. b., 7" cap.	\$42.50.
Drill, one spindle Leland-Gifford, h. s., b. b., (bench) 7" cap.	37.50.
Drill, one spindle Avey, h. s., b. b., (bench) 7" cap.	40.00.
Drill, press, four spindle Fox, No. 1 M. T.	40.00.
Grinder, No. 1 Universal tool & cutter, No. 1 M. T.	37.50.

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

As we are vacating one of our warehouses before the end of March, we will sell below cash prices these high grade guaranteed Machine Tools:

MILLING MACHINES

No. 1 Brown & Sharpe, pl., s. pul.	No. 1 1/2 B Milwaukee, double arm.
No. 2 Kemp Smith, plain.	No. 1 Brown & Sharpe, plain.
No. 2S Milwaukee, double arm	No. 3 Burke, hand.

ATHES

23"x12' Sidney, q. c. g.	16"x 6' Sebastian, m. d.
24"x12' Bradford, q. c. g.	16"x 6' Hendey, taper, draw and relieving attachment.
24"x10' Bradford, plain.	14"x6' LeBlond, quick change gears, taper.
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SHAPERS

32" Columbia, single pulley.	24" Cincinnati, geared.
24" Potter & Johnston, rotary table, vertical and horizontal feed.	16" Gould & Eberhardt, geared.
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GRINDERS

11" & 10" Brown & Sharpe cylindrical, self-contained, motor drive.	No. 60 Heald, cylinder.
No. 3 Brown & Sharpe, cylinder.	No. 6 Heald, internal.

SCREW MACHINES

No. 1 Warner & Swasey, universal.	Nos. 1 & 2 Brown & Sharpe.
No. 6 W. & S., pwr. cross, lg. feed.	No. 1B Foster, geared head.
Nos. 1, 2, 3 & 4 W. & S., b. g. & pl.	4-spindle, model G, automatic.

PRESSES

No. 3 1/2 A Bliss toggle draw.	No. 5 Michigan double act. cam.
No. 74 Bliss, str. side, geared.	8' Toledo, 3/16" capacity.
No. 62 Bliss, 6" str.	16" cap. squaring shear.
No. 13C Ferracute.	

MISCELLANEOUS

Bolt cutters, 1" Landis & Acme.	Gear cutter, No. 13 B. & S. spur & bev.
Drill presses, high speed and plain.	Gear hobber, No. 1 Schuchardt & S.
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Gear hobber, No. 1 Farwell.....	185.	Miller, 2 M. Cincinnati s. p.....	875.
Gear hobber, No. 12 Barber-C.....	390.	Miller, 3 Cinti. hi. pr., s. p.....	1100.
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Grinder, surf. No. 2 W. & M.....	385.	Radial, 5' American grd. hd.....	1375.
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Bor. mills, 36" Rogers, 48" Colburn.		Miller, No. 4 Hendey, grd. head.	
Brake, 8"x316" Robinson m. d.		Miller, No. 31B Milwaukee. vert. att.	
Gear cutter, 60" Brown & Sharpe.		Miller, No. 3 Cincinnati, cone.	
Gear hobbers, 18H & 24H G. & E.		Miller, No. 14 Garvin, vertical.	
Grinder, No. 2 Landis, universal.		Miller, No. 2 Knight vertical.	
Hammer, 900 lbs. Beaudry.		Pipe mchs., 8" Saunders, 8" Jarecki.	
Keyseater, No. 2 Catlin; No. 0 M&M		Planer, 24"x24"x16' Woodward m. d.	
Lathe, 84"x16' Putnam geared hd.		Punch & shear, No. 23 Pels.	
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Lathe, 26"x12' Greaves-Klusman.		Shapers, 25", 20" and 16" S. & M.	
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Lathe, 18"x20"x8' L. & S. select. hd.		universal both bar and chucking.	
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Grinder, No. 22 Heald rotary surf.

Hobbers, Nos. 3, 12-B & C.
Lathe, No. 9 LeBlond multi-cut.
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Column facer, 14" Espen-Lucas.
Crane, electric travel, 15 ton a. c.
Drill, 4' Cincinnati-Bickford, radial.
Grinder, 30"x162" Landis, m. d.

Hammer, 2000 lbs. Chambersburg.
Hammer, 1100 lb. N.-B.-P. sgl. fr.
Lathe, 36"-60"x32" McCabe, belt.
Punch, 30" beam cap. 2-1"x1".
Punch and shear, 24" Southwark,
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Shear, 8' Covington squaring, gap
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Automatic, Gridley 4-spindle, 1 $\frac{1}{2}$ " and 2" motor drive.
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Miller, No. 6 Becker vertical, with rotary table.
Miller, No. 24 Cincinnati automatic, 220 volt, 3 phase, 60 cycle motor.
Miller, No. 4 Cincinnati 36" hydromatic, motor drive, used 5 days.
Planer, Cincinnati 24"x6" Tu-Speed.
Planer, 36"x15" Betts, 2 heads.
Press, No. 8 Bliss double crank, motor drive.
Presses, 7 No. 5 Loshbough-Jordan inclinable, geared.
Presses, 2 No. 90 Toledo double crank, 4" stroke.
Presses, No. 754 Bliss straight side, geared, 5" stroke.
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Miller, No. 2 B. & S. univ., c. dr.

Miller, No. 26 Kempsmith univ.

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Millers, No. 2 Ohio & Milw. pl., s.p.d.

Miller, No. 24 Rockford pl., vert. att.

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4" stroke.

Press, No. 96-B Toledo d. c., 60"

between housings.

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Planer, 36"x36"x9" Cinti., 2 heads.

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Tapper, 6 spd. Acme, cap. $\frac{1}{4}$ " nut.

Tapper, Garvin vert. 2 spd., cap. $\frac{1}{4}$ ".

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Ohl 10'-No. 10 gauge.

Ohl 12'6"- $\frac{3}{4}$ " gauge.

Chicago 10'6"-3/16" gauge.

Chicago 10'6"- $\frac{1}{4}$ " gauge.

Cincinnati 6'6"-No. 10 gauge.

Cincinnati 8'6"-No. 12 gauge.

LEAF TYPE BRAKES

Chicago 10'-3/16"; $\frac{3}{4}$ "; $\frac{1}{4}$ ".

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Pratt & Whitney Nos. 1, 2 and 3.

Jackson No. 10.

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63"x30" geared head.

48"x30" geared head.

48"x40" geared head.

18"x30"x20" gap.

42"x70"x16" gap.

24"x48"x12" McCabe.

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12" Curtis, motor drive.

6", 8", 10" Signal & Keeler.

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Hilles & Jones 48" plate, $\frac{1}{4}$ "-1".

Hilles & Jones 72" plate, 1".

Unishear 36"- $\frac{1}{4}$ ", motor drive.

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Bending rolls, 4' to 30'.

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Planers, all sizes, 24" to 120".

Planers, plate, 16' to 24'.

Radial drills, 3' to 72".

Shapers, 16' to 36".

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USED AND REBUILT MACHINERY

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Wachs-Gregg & Co.,

117 N. Jefferson St., Chicago

Boring mch., Giddings-Lewis No. 32.
Boring mill, Bullard 60".
Drill, Cincinnati Bickford 3' radial,
Drill, W. E. gang 6' radial.
Drill, Foote-Burt 24" heavy duty.
Drill, Harrington, 61 B, multiple.
Drill, Woodward & Rogers 6-spd.
Drill, Pratt & Whitney No. 12 mult.
Fox lathe, Warner & Swasey No. 3.
Grinders, Nos. 4 and 6 Badger disc.
Hammer, Mayer 100 lb. upright.

Lathe, Bradford 32"x18".
Lathe, Whitcomb-Blaisdell 18"x9".
Milling machine, Cinn. No. 2 univ.
Milling mche., Rockford No. 0 plain
Planer, Belmer, 48"x48"x12", 3 hds.
Press, V. & O., No. 2.
Press, Niagara No. 5 1/2 o. b. i.
Screw machine, Foster No. 4.
Shaper, Cincinnati 20".
Turret lathe, Pratt & Whitney 8"x1 1/2"
Turret lathe, Warner & S. No. 2 A.

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Miles Machinery Co.,

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Nos. 10 & 16 Blanchard.
14"x40" Pratt & Whitney.
20"x50" Safety Emery Wheel Co.

12"x12"x18" Diamond No. 3.
12" Arter rotary.
8", 12" & 16" Heald rotary

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22"x22"x 4' Powell.
30"x30"x 8' Gray.
30"x30"x 8' Cleveland.
30"x30"x12' Cleveland.
32"x32"x12' Niles.

36"x36"x 8' Gray.
36"x36"x12' Cincinnati.
42"x42"x14' Niles Bement Pond.
48"x48"x10' Liberty.
72"x60"x14' Cleveland.

LATHES

12"x 6' Hendey.
14"x 6' LeBlond.
15"x10' Carroll Jamieson.
16"x 6' Monarch.

16"x 8' Cisco, s. p. d.
18"x 8' Lodge & Shipley.
20"x 8' Lodge & Shipley.
26"x14' Putnam.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1211-1223 N. 12th St.,

St. Louis, Mo.

Bar shear, 5"x8".
Bolt threader, 1 1/2" Merriman.
Bolt threader, 2" Landis.
Boring mill, 36" Gisholt.
Drill, 3' American, triple purpose.
Drill, 14" Mason high speed.
Drill, 20" Champion.
Drill, 22" Barnes, back geared.
Drill, 24" Prentice, sliding head.
Drill, 25" Barnes back geared.
Drill, 28" Barnes sliding head.
Drill, 1-spindle Avey.
Drill, 2-spindle Leland-Gifford.
Drill, 3-spindle Avey.
Grinder, Wells Bros. universal.
Grinder, 12"x60" Landis universal.
Hammer, 60 lb. Bradley helve.
Hammer, 600 lb. steam.
Lathe, 18"x10' Bradford.
Lathe, 20"x10' Bradford.
Lathe, 18"x12' Mueller.
Lathe, 24"x12' Lodge & Shipley.
Lathe, 24"x12' Schumacher & Boye.
Lathe, 30"x15' Lodge & S., q. c. g.
Lathe, 36"x15' American, q. c. g.
Lathe, 26"—48"x18' McCabe 2-spd.

Miller, No. 1 U. S. hand.
Miller, No. 2 LeBlond universal.
Miller, No. 2 Ohio single pulley dr.
Miller, No. 3 Rockford hand.
Miller, No. 5-B Brown & Sharpe.
Pipe machine, 8" Bignall & Keeler.
Pipe machine, 10" Bignall & Keeler.
Press, No. 57 Swaine straight back.
Press No. 1 1/2 Bliss toggle.
Press, No. 3 Toledo.
Press, Stiles & Parker drawing.
Press, No. 37 Niagara str. back.
Press, No. 24 Toledo cam drawing.
Press, No. 723 Toledo cam drawing.
Presses, two No. 35 o. b. i. Swaine.
Punch, No. 14 W. W., 12" throat.
Punch, double end, two 20" throats,
capacity 1" in 1".
Planer, 42"x42"x26" Wheeler, 2 hds.
Screw machine, No. 3A Warner & S.
Shaper, 16" Smith & Mills.
Shaper, 32" Cincinnati.
Shaper, 24" American-Klopp.
Shear, 48" Excelsior, No. 16 gauge.
Squaring shear, 8' power.
Tapper auto., Rickert & Schafer.

USED AND REBUILT MACHINERY

FOR SALE BY

The Reeve-Fritts Co., 558-560 W. Washington Blvd., Chicago, Ill.

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Drill press, 2-spindle Leland, p. f.
Drill press, 14" 2-sp. Leland, p.f., t.a.
Gear hobber, No. 1 Adams.
Lathe, 14"x6" Hendey, q. c. g.

Lathe, 18"x6" Ryerson q. c. g.
Miller, No. 2 Rockford plain.
Pinion cutter, No. 1 Sloan & Chace.
Planer, 24x24x6 American.
Wood planer, 12" Porter.

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United Mchry. & Supply Co.,

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Lathe, turret, No. 3 Foster.
Miller, 14B Milwaukee universal.
Motors, a. c., 75 and 15 h. p., G. E.
Presses, (2) Nos. 56 & 35 Toledo b.g.

1241 Walton St., St. Louis, Mo.

Punch and shear, $\frac{1}{2}$ " in $\frac{1}{8}$ ", double.
Rolls, (3), 7' x7", 6' x5", 6' x9".
Sandblast, complete 8'x10' room.
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36"x20" Am. H. D. G. H., Q. C., A. C. 27"x16" Amer. H. D., G. H., Q. C. 24"x12" Amer. H. D., G. H., Q. C., t. a. 20"x8" Hendey G. H., Q. C., taper att. 18"x8" American Hi-Duty G. H., Q. C. 16"x8" L. & S. Sel. G. H., Q. C. t. a.

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18" Gleason Bevel Gear Generator. Nos. 2, 3 & 12 Barber-C. Gear Hob. No. 18-H G. & E., H. D. Gear Hobber. Nos. 6, 61 & 615 Fellows Gear Shapers. Nos. 3-26", 4-48" B. & S. Auto. S. G. No. 13 B. & S. Auto. Spur & Bevel Gear 12"x36", 12"x72" Landis Pl., Self-Con. 10"x24, 10"x36", 10"x56" Land. Pl. S-C 10"x36", 12"x72", 18"x96" Norton Pl.

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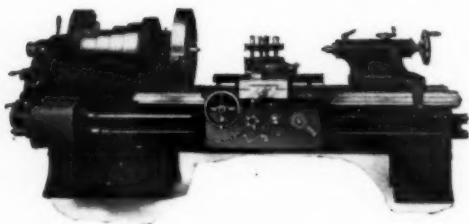
Air Comp., 14"x14" Bury Class L, b. d. Bolt Thread, Mch., 1", 1½" Landis. Bor. Mills, 24 & 36 Bullard N. Era vert. Boring Mills, 36"-44" Niles-Bement-P., Side Head Vertical A. C. Mtr. Dr. Bor. Mill, 72" Niles Vert., 2 heads. Broach Mch. Nos. 3B, 4 LaPointe. Die Sinks, Nos. 2 & 3 P. & W. Millers, 4" Pratt & Whitney Spine. Miller, 6"x14", 6"x80" P. & W. Ths.

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- 20"x8" Am. Grd. Hd., M. D., late t.
- 30"x10" Lodge & Shipley, J. S. C. D. D. B. G. Q. C.
- 18"x8" Reed-Prentice Grd. Hd. Q. C.
- 20-30"x7" Monarch Helical G. H. Gap
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- 24" Queen City heavy duty, cone dr.
- 24" Cinti. h. d. mtr. dr. thru gearbox.

Miscellaneous

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- No. 3-B LaPointe Broaching Mche.
- 25 ton Henry & Wright Dieing Mche.
- 50 ton Henry & Wright Dieing Mche.
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- Nos. 1 & 2 Davis Keyseaters.
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- No. 76 Toledo Open Bk. Gap Frame.
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12' Betts, 2 Swiv. Hds. cone drive.
10' Niles, 2 Swiv. Hds., motor drive.
10' Pond, 2 Swiv. Hds., motor drive.
100' Sellers, 2 Swiv. Hds., m. d.
96' Cin., 2 Swiv. Hds., motor dr.
72' King, 2 Swiv. Hds., belt drive.
72' Sellers, 2 Swiv. Hds., m. d.
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36' Bullard New Era, Lub. Syst.
24' Bullard New Era, s. p. d.

Horizontal

7' Bar Schiess portable floor borer, motor drive.
64' Bar Niles belt drive.
64' Bar Bement M., Floor Type m. d.
44' Bar Niles, motor drive.
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24' Bar Univ. Table Type, s. p. d.

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4' American Radial, s. p. d.
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No. D-7 Colburn Heavy D., s. p. d.
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32"x21" LeBlond motor drive.
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24"x10" American Grd. Hd., m. d.
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23"x 8" LeBlond Grd. Hd., m. d.
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18"x 8" L. & S. q. c. g. Turret on bed
14"x8" Springfield grd. hd., t. a., m. d.

MILLING MACHINES

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No. 4 Kempamith Maxi-miller.
No. 4 Cincinnati Univ., cone drive.
No. 4 LeBlond Plain, cone drive.
No. 2M Cinti. Plain, motor in base.
No. 4 Cincinnati vertical s. p. d.
No. 3 Milwaukee vert. motor in base
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45" Oosterlein Tilted Rotary.

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 3½" Bar Universal Horizontal Boring Mill, S. P. D.
 No. 3 Avey Heavy Duty Ball Bearing Drill, 2-spindle P. F.
 4" American Plain Radial Drill Press, M. D.
 16"x72" Landis Crankshaft Grinder, M. D.
 18"x8" Lodge & Shipley Engine Lathe, T. A.
 No. 2 Rockford Universal Milling Machine, Vertical Head.
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 24"x24"x7" Cincinnati Planer, tu-speed.
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10½	64.00	32.00	16	72.00	45.25
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20" American Pattern Makers' Lathe; 8' 4" bed, 2 H. P.
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Motor bracket.

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No. 166 Oliver (Pattern Makers') 16" Ball Bearing Jointer.

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14"x6' Monarch, quick change.

16"x8' Hamilton, quick change.

17"x 8' LeBlond, quick change.

24"x14' LeBlond.

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Automatic, National-Acme.

1½" cap. Smurr & Kamen.

2"x24" and 3"x36" J. & L.

1" Pratt & Whitney.

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14" Niles, traveling head.

24" Rockford, back geared.

DRILLS

Bausch No. 1, multiple spindle.

32" Hofer, sliding head.

6' ceiling.

44" Stover sensitive.

MILLING MACHINES

No. 1½ American plain.

No. 25 Becker plain.

18" Cincinnati automatic.

No. 5 Becker vertical.

MISCELLANEOUS

Band saw, Clark, compound.

Band saw, Napier 10"x10".

Gear miller, No. 1 Bilton.

Sand Blast, Boland.

Shear, Robinson 12 ga., 60".

Shear, Pettingell, 60" throat.

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42"x36"x12" Cincinnati, 2 heads.

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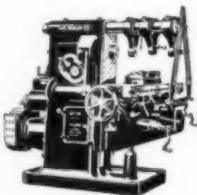
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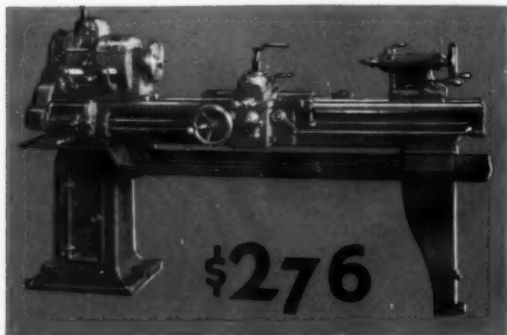
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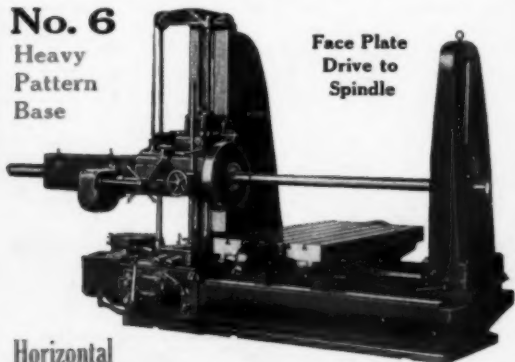


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